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J.N

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/076,670	05/12/98	EGLIT	A 3444

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LM31/0707

EXAMINER

JOHNSON, T

ART UNIT	PAPER NUMBER
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2723

9

DATE MAILED: 07/07/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/076,670

Applicant(s)

Egolf et al.

Examiner

T. Johnson

Group Art Unit

2723

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

☒ Responsive to communication(s) filed on 5/25/99

☒ This action is **FINAL**.

- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-28 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-28 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of References Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

Part III Detailed Action

Terminal Disclaimer Not Proper

1. The terminal disclaimer filed on May 25, 1999 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of September 29, 2015 has been reviewed and is NOT accepted.
2. The patent, 5,768,507, which forms the basis for the double patenting rejection, is not identified in the Terminal Disclaimer.

Drawings

3. The drawings are objected to because in Fig. 4, blocks 480 and 490, the last letters of "CIRCUIT" (i.e. "T") and "INTERPOLATOR" (i.e. "R") are respectively illegible. The first "M" in "TO LOCAL MEMORY" in block 510 of Fig. 6 is also illegible. Correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

5. Claims 24-27 are rejected under 35 U.S.C. 103 as being unpatentable over the admitted prior art in the Background of the Applicant's specification in view of Acampora, 4,691,233.

For claim 24, a graphics controller integrated circuit for upscaling a source video image comprising scan lines, each with pixels is provided in the Background on page 4, lines 1-10, where the mention the word "chips", i.e. integrated circuits. An encoder and decoder are not provided in the Background; however, using coders and decoders in interpolation systems are very common in video display systems as evidenced by Acampora in Fig. 7, for example, which

also includes transmitting uncompressed scan lines, and the Applicant's admitted prior art in the Background also appears to provide uncompressed scan lines, thus receiving a first uncompressed scan line of the source video image is provided by these two references. Compressing the pixel data corresponding to the first scan line to generate a compressed data is provided by at least Acampora in at least Fig. 7, where he provides for both an encoder and decoder. Storing the compressed data in a local memory is provided in the Applicant's Background, which can be used with Acampora between the coder and decoder for assisting in line interpolation, or the system of Acampora can be used with the graphics controller in the Background, where it is well known and conventional that graphics controllers are used with encoding systems, and that local memories are used with encoding systems. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the encoder and decoder of Acampora with the system in the Background, since both systems are in the same environment of interpolating video signals, because Acampora provides for at least three different compressors in one system in Fig. 7, blocks 614, 18, and 26, thus providing for bandwidth and memory conservation for "drastically reducing the data rate" - c. 3, lines 40-47, and also provides for anti-alias and ghost reduction filters (commonly used in TV systems), thus providing for a clear video signal. In any case, a local memory is provided by Acampora in Fig. 7 by buffers 28 and 48 and in the Background on page 5, lines 5-10. Retrieving a second scan line of the source video image is provided by both the Applicant's admitted prior art and Acampora, since they provide for a plurality of scan lines, which collectively make up the video image frames. Retrieving the compressed data from the local memory is provided by Acampora in at least Fig. 7, block 48, and as noted above, a local memory is also provided by the Applicant's admitted prior art. Decompressing the compressed data to generate the pixel data is provided by Acampora in at least the decoder of Fig. 7. Generating a set of additional pixels by interpolating the decompressed pixel data and a second scan line for an upscaled image is provided by Acampora in Fig. 7, block 662, and is also provided in the Applicant's Background on page 5, lines 1-10.

For claim 25, a DPCM decoder and DPCM encoder are provided by Acampora in Fig. 7 and in the title.

For claim 26, a display memory for storing the first and second scan lines of pixel data is prior to encoding (and thus uncompressed) and interpolating is suggested by block 12 of Fig. 7 of Acampora, since that is the source of the scan lines, which is provided on page 4, lines 1-3, and is further provided in the Applicants Background in the first full paragraph on page 4.

For claim 27, compressing the uncompressed data set by half is a conventional compression ratio provided in c. 10, lines 45-50 of Acampora.

Non - statutory Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1, 3, 5, 6, 8-10, 13, 15, 17-18, 20-22, and 24-25 are rejected under the judicially created doctrine of double patenting over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

Claim 1 of the instant application (09/076,670) is broader and corresponds to claim 3 of patent 5,768,507. The words "first" and "second" of this application for claim 1 correspond to the words "present" and "subsequent" of 5,768,507, and retrieving is at least obviously, if not inherently, provided by claim 3 of the patent, since otherwise it could not decompress.

Claim 3 of the instant application corresponds to part of claim 3 of 5,768,507.

For claim 5 of the instant application, page 7, lines 10-11 of the Applicants specification of the instant application appears to be the extent of the disclosure on "a polyphase interpolator", which provides no detailed description. Therefore, it would've been obvious to one having ordinary skill in the art at the time the invention was made to use a polyphase interpolator with the disclosure of the patent, since it does not appear to be critical, and does not appear to

provide any unexpected results by using a polyphase interpolator in lieu of some other conventional and well known interpolator. The previous rejection is separate from the following rejection of claim 5. For claim 5, while the Applicants Background and Acampora do not explicitly provide for a polyphase interpolator, they are conventional and well known, official notice, and can be used with as the interpolators of either the Applicants Background or Acampora. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use a polyphase interpolator, since they are conventional and well known, and because the invention of Acampora or the Applicants Background do not require a specific type of interpolator to function.

Claim 6 of the instant application corresponds to part of claim 3 of the patent.

For claim 8 of the instant application, claim 3 of the patent explicitly provides for the override circuit which generates a predicted value for the first pixel, which at least inherently exists for the purpose of avoiding overload in DPCM, since this is why the override circuit is built. (Refer to at least the title and the first and fourth full paragraph in c. 4 of the patent, and the full paragraph on page 22 and the paragraph bridging pages 23-24 of the instant application, which set forth that the generation of the predicted value for the first pixel data is what provides for avoiding "a overload condition in DPCM decoding and encoding" as claimed in claim 8 of the instant application.)

For claim 9 of the instant application, changing a predicted value is provided by the override circuit of claim 3 of the patent, which is for changing or "overriding" the typical predicted value, and is more specifically provided by the multiplexer claimed in claim 4 of the patent.

Claim 10 of the instant application corresponds to claim 6 of the patent. It is at least obvious, if not inherent, that the override circuit is provided in the MVA, since the override circuit is integrally connected to both the encoder and decoders as disclosed in at least the claims, and decoder's multiplexer is part of the override circuit, where this multiplexer is explicitly claimed in claim 5 of the patent, from which claim 6 depends. Therefore, the MVA block contains at least part, if not all, of the override circuit as claimed. It is further obvious, since both the encoder and the override circuit are coupled together to provide a predicted value, and because the purpose

of the override circuit is due to the predictor of the encoder to which it is fundamentally connected by basic component circuitry.

Claim 13 of the instant application corresponds to claim 10 of the patent, where first and second scan lines obviously correspond to present and subsequent scan lines.

Claim 15 of the instant application corresponds to part of claim 10 of the patent.

For claim 17, see the rejection of at least claim 5 above, with respect to the double patenting rejection.

Claim 18 of the instant application corresponds to part of claim 10 of the patent.

For claims 20 and 21, see the double patenting rejection of claims 8 and 9 above of the instant application. Claims 20 and 21 of this application correspond to claims 10 and 11 of the patent, where an override circuit is provided for changing a predicted value.

Claim 22 of the instant application corresponds to claim 13 of the patent. It is at least obvious, if not inherent, that the override circuit is provided in the MVA, since the override circuit is integrally connected to both the encoder and decoders as disclosed in at least the claims, and decoder's multiplexer is part of the override circuit, where this multiplexer is explicitly claimed in claim 12 of the patent, from which claim 13 depends. Therefore, the MVA block contains at least part, if not all, of the override circuit as claimed. It is further obvious, since both the encoder and the override circuit are coupled together to provide a predicted value, and because the purpose of the override circuit is due to the predictor of the encoder to which it is fundamentally connected by basic component circuitry.

Claim 24 of the instant application corresponds to claim 16 of the patent. Claim 16 has a limitation that claim 24 does not by generating a predicted value. Claim 16 obviously provides for the second scan line of claim 24 by reciting a subsequent scan line in the interpolation step, and obviously retrieves a second or subsequent scan line, since otherwise it could not interpolate it. Claim 16 also obviously or inherently provides for an uncompressed scan line, since it subsequently provides for compression of this scan line.

Claim 25 of the instant application corresponds to claim 17 of the patent

8. Claims 2 and 14 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507 in view of the Applicants admitted prior art in the Background of the specification of the instant application.

For all rejections herein, the above rejections over the patent, 5,768,507, are incorporated herein.

For claims 2 and 14, a display memory for storing the first and second scan lines of pixel data is prior to encoding and interpolating is provided in the Applicants Background in the first full paragraph on page 4. It is practically inherent that the scan lines be stored before being processed, so that it would've been obvious to one having ordinary skill in the art at the time the invention was made to store the scan lines before interpolation.

9. Claims 4 and 16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507 in view of Acampora, 4,691,233.

For all rejections herein, the above rejections over the patent, 5,768,507, are incorporated herein.

For claims 4 and 16 compressing the data set by half is provided in c. 10, lines 45-50 of Acampora, which is a conventional and well known compression ratio that can be used by the system in the patent claims. It would've been obvious to one having ordinary skill in the art at the time the invention was made compress by half, since this is a conventional and well known ratio, and because the decimation of Acampora is a simple well known circuit.

10. Claims 7 and 19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507 in view of Sabri, 4,368,487 and Jones, "Principles and Applications of Digital Electronics".

For all rejections herein, the above rejections over the patent, 5,768,507, are incorporated herein.

For claim 7 and 19, the patent claims do not explicitly provide for a set of flip-flops in the predictor, but this is conventionally provided in predictors by delay flip-flop(s). Sabri also provides for a DPCM system for compressing video signals in the abstract, where the DPCM predictor uses delays as noted in the paragraph starting in c. 2, line 63. The patent system can use the predictor of Sabri by substitution or updating. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the predictor of Sabri, since it is used in a video DPCM system for reducing blur of moving images, and because of other advantages provided beginning in c. 1, line 48. Sabri does not explicitly provide for the exact composition of the circuitry at the base level as to what comprises the delays in the predictor. However, it is very common for these delays to be flip-flops, because delay flip-flops are basic circuit elements that are conventionally used for such a purpose. Thus Sabri can use D flip-flops if he does not already. Jones provides a textbook description of D flip-flops on pages 216-217 and shows the bit input and output of this memory device in Fig. 8-22. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use D flip-flops for delays in a predictor circuit provided by Sabri and the patent system above, since they are simple to design for due to the "truth table" being "quite simple", and because D flip-flops are "widely used" as noted in the second paragraph on page 217, and are also readily available.

11. Claims 11, 23, and 28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507 in view of Bindlish et al., 5,608,864.

For all rejections herein, the above rejections over the patent, 5,768,507, are incorporated herein.

For claims 11 and 23, a video controller for sending graphics pixels is provided by Bindlish et al. in the first sentence of the abstract, and in Fig. 6 and c. 11, lines 44-55 and c. 12, lines 49-67, and a multiplexer for receiving the graphics pixels and pixel data of the upscaled video image, and for selectively sending to a display unit one of these is provided by Bindlish et al. in at least Fig. 6, multiplexer 635. The conventional and well known video controller and multiplexer of Bindlish et al. can be used by the patent system in conjunction with the graphics

controller. It would've been obvious to one having ordinary skill in the art at the time the invention was made use the video controller and multiplexer of Bindlish et al., since they provide for parallel pipelines and various compression formats as noted in at least the abstract.

For claim 28, see the rejection of at least claims 1, 3, and 11, with respect to the double patenting rejection.

12. Claims 12 and 26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507 in view of Bindlish et al., 5,608,864, and further in view of the admitted prior art in the Background of the Applicant's specification.

For all rejections herein, the above rejections over the patent, 5,768,507, are incorporated herein.

For claims 12 and 26, receiving pixel data of the first scan line from a display memory is provided in the Applicants Background in the first full paragraph on page 4. It is practically inherent that the scan lines be stored before being processed, so that it would've been obvious to one having ordinary skill in the art at the time the invention was made to store the scan lines before encoding, and claims 3 and 10 of the patent already provide for receiving scan line data, where it is claimed that it is a video source, which is admitted as provided by a conventional and well known display memory in at least the first full paragraph on page 4. It is practically inherent that the scan lines be stored before being processed, so that it would've been obvious to one having ordinary skill in the art at the time the invention was made to store the scan lines before interpolation.

13. Claim 27 is are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 4, 6, 10, 11-13, and 16-17 of U. S. Patent No. 5,768,507 in view of Bindlish et al., 5,608,864, and further in view of the admitted prior art in the Background of the Applicant's specification, as applied to claims 12 and 26 above, and further in view of Acampora, 4,691,233.

For all rejections herein, the above rejections over the patent, 5,768,507, are incorporated herein.

For claim 27, compressing the data set by half is provided in c. 10, lines 45-50 of Acampora, which is a conventional and well known compression ratio that can be used by the system in the patent claims. It would've been obvious to one having ordinary skill in the art at the time the invention was made compress by half, since this is a conventional and well known ratio, and because the decimation of Acampora is a simple well known circuit.

Response to Amendment

14. The objections to the disclosure have been overcome by amendment. The objections to claims 26-28 have been overcome by amendment. The 112/1 and 112/2 rejections of claims 4, 10, 16, 22, 24, 27, and 28 have been overcome by amendment.

15. Applicant's arguments filed May 25, 1999 have been fully considered but they are not persuasive.

The Applicant argues on page 12 of the amendment, with respect to claim 24, that Acampora does not provide for a single device which performs encoding and decoding functionality, and that the Background does not provide for a graphics controller which performs compression and decompression. The Examiner's argument is that it is obvious to use compression and decompression with the graphics controller of the Applicant's admitted prior art, and further that it is obvious to use compression and decompression in a single device, such as the well known and conventional graphics controller disclosed by the Applicant's admitted prior art, since compression saves memory space, which is anticipated by Acampora – see the rejection above.

The Applicant argues in the paragraph bridging pages 12-13 of the amendment, with respect to claims 25-27, that for claim 26 (or 2), that storing uncompressed pixels data is not provided by either reference; that for claim 25 (or 3), that neither reference provides a graphics controller with DPCM compression and decompression; and that claim 27 (or 4), the prior art of record does not provide for compressing pixel data in a first scan line. The Examiner respectively disagrees. For claim 26, storing uncompressed pixel data is at least inherently provided by Acampora, since they provide for a source of uncompressed pixel data, and is further provided to the controller of the Applicant's admitted prior art on at least the first full paragraph on page 4 of the Applicant's Background. For claim 25, Acampora explicitly provides for DPCM (spelled out) in at least the title. For claim 27, compressing pixel scan lines is anticipated by Acampora in at least the abstract.

Allowable Subject Matter

16. Claims 1-23 and 28 would be allowable if a proper Terminal Disclaimer is submitted, as set forth above in this Office action.

17. The following is an examiner's statement of reasons for allowance:

The prior art of record does not suggest an encoder circuit integrated into a graphics controller integrated circuit for receiving a set of uncompressed pixel data for a first scan line of the source video image from the processing unit and generating a compressed data set corresponding to the set of pixel data for the first scan line; a local memory coupled to receive and store the compressed data set; a decoder circuit integrated into the graphics controller integrated circuit for retrieving the compressed data set in the local memory and for decompressing the compressed data set to generate a decompressed pixel data set; and an interpolator integrated into the graphics controller integrated circuit for receiving the decompressed pixel data set and a set of pixel data for a second scan line of the source video, the interpolator interpolating the decompressed pixel data set and the set of pixel data for the second scan line to generate a set of additional pixel data comprised in the upscaled video image.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Final

18. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action.

Contact Information

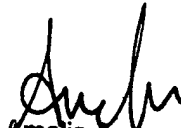
19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M. Johnson whose telephone number is (703) 306-3096.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

The Group Art Unit FAX numbers are (703) 308-5397 and (703) 306-5406.

TJ

Timothy M. Johnson
Patent Examiner
Art Unit 2723
July 01, 1999


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